

IN THE CLAIMS

Sub B1  
A1  
11. (Amended) A control system for controlling a hard disk drive having a rotatably supported disk, a read/write head which is movable relative to the disk and which outputs an analog servo wedge signal read from the disk, and an actuator operable to urge movement of the read/write head relative to the disk in response to an analog positioning signal, said control system comprising:

a position-error-signal channel operable to generate an analog position error signal in response to the analog servo wedge signal;

an analog-to-digital converter circuit operable to convert the analog position error signal to a digital position error signal;

a digital signal processor operable to generate digital positioning information as a function of the digital position error signal, said digital signal processor utilizing a model reference control technique based on control characteristics of said hard disk drive in generating the digital positioning information; and

a digital-to-analog converter operable to convert the digital positioning information into the analog positioning signal.

Sub D1  
A2  
21. (Amended) A method according to Claim [18] 19 wherein said step of generating the digital third control signal includes the steps of:

generating a digital positioning signal by adding the digital first control signal and the digital third control signal in a manner giving the digital first control signal greater weight than the digital third control signal;

generating in response to the digital positioning signal and the digital position error signal a state estimation signal representing an estimated state of the actuator;

generating a state error signal by subtracting the state estimation signal from the second control signal; and

generating in response to the state error signal a correction control signal which is the digital third control signal.